## REMARKS/ARGUMENTS

Claims 48-49, 52-59 and 62-67 are pending in the application. No claims are allowed. Claims 48, 53-58 and 62-66 have been amended. Entry of the amendment, reconsideration of the rejection, and allowance of claims 48-49, 52-59 and 62-67 are respectfully requested.

Applicants gratefully acknowledge the Examiner's withdrawal of the rejection of claims 48-67 as containing new matter as well as the rejection of claims 48-67 as containing subject matter that was not described in the specification.

The application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences as set forth in 37 C.F.R. §1.821 -1.825. In order to comply with the Examiner's request, sequence identifiers (*i.e.*, SEQ ID NOS) have been inserted into the Brief Description of Figures 2-5. In addition, the text of the Brief Description of Figures 2-5 has been expanded to further clarify the Figures. Support for this amendment can be found in Figures 2-5.

**The Amendment**

The amendment to the claims finds support in the application and drawings as originally filed.

Claims 48 and 58 have been amended to further clarify that a DNA sequence encoding a signal peptide is fused and positioned between the first plant promoter and the DNA sequence encoding sarcotoxin 1a. Support for this amendment can be found in Example 1 (page 17, line 6 - page 21, line 21) of the specification, wherein Applicants describe how to construct the fusion protein. No new matter was added by this amendment.

Claims 54 and 63 have been amended to indicate that the signal peptide is from a plant gene. Support for this amendment can be found on page 16, line 2 and throughout the specification.

Claims 53, 55, 56, 57, 62, 64, 65 and 66 have been amended to correct for proper antecedent basis. Support for this amendment can be found throughout the specification.

**Rejections Under 35 U.S.C. §112**

***Rejections under 35 U.S.C. § 112, first paragraph***

Claims 48-49, 52-59 and 62-67 remain rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enablement. The Examiner states that the specification does not reasonably provide enablement for a method of conferring resistance to pathogenic fungi on a plant by transformation with any expression cassette encoding sarcotoxin 1a operably linked to a dual promoter comprising an inducible promoter and a constitutive promoter, and plants so transformed.

To the extent that the rejection applies to the claims as amended, Applicants respectfully traverse the rejection.

With regard to the signal sequence, the Examiner's rejection appears to be two-fold. First, the office action states that the specification does not teach that plants transformed with the non-fusion protein are resistant to pathogens. In the interest of prosecution efficiency, Applicants have amended claims 48 and 58 to state that a DNA sequence encoding a *signal peptide* is fused to and positioned between the promoter and the DNA sequence encoding sarcotoxin 1a. All other claims depend directly or indirectly on claims 48 or 58. Accordingly, to the extent that the rejection is based on the presence of a signal sequence, the rejection should be withdrawn.

Second, the office action states that the specification does not teach any other plant genes that can be used in the fusion constructs, and allegedly teaches that PR-1a must be used (page 2, lines 18-22). Applicants respectfully traverse the rejection.

Nothing more than routine experimentation would be required of the skilled artisan to exchange the PR-1a signal sequence with another suitable signal sequence in order to construct a fusion protein as taught in the instant invention. As described in *Wands*, a "considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which experimentation should precede." *Wands*, 8 USPQ2d at 1404 (quoting *In re Jackson*,

217 USPQ 804 (Bd. Pat. App. & Int. 1982). The courts have also repeatedly held that a "patent need not teach, and preferably omits, what is well known in the art" *(Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, 221 USPQ 481 (Fed. Cir. 1984)).

Applicants respectfully clarify that the sentence quoted by the Examiner refers to Japanese Patent Publication No. 7-250685 and is mainly concerned with the effects of the chitinase hinge region, wherein the hinge region (not the signal sequence) stabilizes the short peptide. This is further discussed on page 16, lines 13-23 of the specification, wherein it is explained that the presence of the hinge region of tobacco chitinase at a link site between tobacco PR-1a proteins, is expected to prevent steric hindrance of the peptide. Since the signal sequence is cleaved off relatively shortly after translation it can not significantly contribute to the stabilization of a peptide. Hence, the Examiner's interpretation that PR-1a must be used as a signal sequence because it stabilizes the peptide is not correct. Moreover, Applicants refer the Examiner to page 9, lines 19-23, which indicates that while the PR-1a gene of tobacco is an exemplary plant gene, the term "plant gene" is not limited to that gene.

In fact, any signal sequence can be used to produce a fusion protein. Applicants refer the Examiner to the copies of the attached standard textbook pages (Buchanan *et al.*, (*ed.*) *Biochemistry & Molecular Biology of Plants* (2000), pages 178-183) wherein signal peptides are discussed in detail. Although this textbook was published after the filing date of this application, it is still representative of what is generally know in the art about signal peptides. It is also noted that additional references cited in the textbook were published before the filing date of the instant application. On page 180 (section 4.5.3) it is stated that signal peptides share important structural features and that the signal peptides of different secretory pathways are interchangeable, not only among plant proteins, but also among plant, animal, and yeast proteins. Hence, the art recognizes that there is no substantial difference in function from one signal sequence to the next. According to the text book (page 180; section 4.5.3), the presence of a signal peptide is sufficient to direct the secretion of a protein. Applicants contend that it would be unduly restrictive to limit Applicants' invention to only one specific signal sequence,

particularly in light of the teachings of the instant invention and what is generally known in the art.

The office action further states that the specification does not teach any stress-induced promoters known at the time of filing other than the PR-1a promoter (see page 5 of the office action). The Examiner cites Okamoto et al. as teaching the unpredictability of the expression of sarcotoxin fusion constructs. The office action also notes that the only constructs shown to work in the instant specification are PSP and PSS, which are PR-1a signal-sarcotoxin and PR-1a signal-sarcotoxin-chitinase hinge-PR-1a protein constructs; and that the presence of PR-1a protein in the construct is required.

Applicants respectfully traverse the rejection. The Examiner is respectfully reminded that "[T]he more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification." (MPEP 2164.03) In this case, stress-induced promoters were well known in the art at the priority date of this application and Applicants are not required to teach what is well known in the art.

The Examiner appears to imply that none of Applicants' explicit teachings and general guidelines with respect to PR-1a promoters are applicable to any other stress-induced promoters. Yet, Applicants' teachings are more than sufficient to practice the invention with other stress-induced promoters, particularly in light of what was known in the art at the time the invention was filed. The following is a list of references which describe various stress-induced promoters known in the art:

i) Rouster *et al.*, *The Plant Journal* 11:513-523 (1997)

ii) Jiang *et al.*, *Plant Mol. Biol.* 30:679-684 (1996)

iii) Shah & Klessig, *The Plant J.* 10:1089-1101 (1996)

iv) Balandin *et al.*, *Plant Mol. Biol.* 27:1197-1204 (1995)

v) Fisscher *et al.*, *Plant Mol. Biol.* 26:873-886 (1994)

vi) Carrasco *et al.*, *Plant Mol. Biol.* 21:1-15 (1993)

vii) Eyal *et al.*, *Plant Mol. Biol.* 19:589-599 (1992)

viii) Krebbers *et al.*, *Plant Mol. Biol.* 11:745-759 (1988)

For example, Rouster *et al.* describe dual promoter systems including an inducible promoter and a constitutive promoter in order to study lipoxygenase expressed in barley grain. Jiang *et al.* describe dual promoter systems including an inducible promoter and a constitutive promoter in order to investigate BN115 gene from winter *Brassica napus*. Applicants contend that one skilled in the art would find no difficulty in exchanging one inducible promoter (*e.g.*, PR-1a) with another known inducible promoter such as one described in Rouster or Jiang. As Applicants have discussed in the previous section, the presence of the PR-1a signal peptide is not required in the fusion construct (*supra*).

The office action further indicates that, while GUS can be expressed very well in transgenic plants, the expression of the attached sarcotoxin and the resulting resistance of the plants (as described in Okamoto *et al.*) depended on the configuration of the constructs; and that there is no reason to suspect that any random plant gene in the place of GUS would produce different results. Applicants respectfully assert that the Examiner's assumption in this regard is based on mere speculation. Specifically, the claimed invention employs a plant gene to produce a fusion protein while Okamoto *et al.* use a bacterial gene (GUS) to produce a fusion protein. Furthermore, the instant invention is directed to antifungal activity, while Okamoto *et al.* describes anti-bacterial activity. Notably, the claimed invention differs substantially from the teachings of Okamoto *et al.* and cannot reasonably be employed to support unpredictability of the instant invention.

In light of the above amendments and remarks, Applicants respectfully request that the rejection of claims 48-49, 52-59 and 62-67 under 35 U.S.C. §112, first paragraph, be withdrawn.

***Rejection under 35 U.S.C. § 112, second paragraph***

Claims 48-49 and 52-57 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

The Examiner states that claim 48 lacks antecedent basis for the limitation "the transformed plant cell" in line 9. Applicants have amended claims 48 to delete the word "transformed" from the phrase "transformed plant cell" in order to comply with the Examiner's helpful suggestion. All other rejected claims depend directly or indirectly on claim 48.

In light of the above amendment, Applicants respectfully request withdrawal of the rejection of claims 48-49 and 52-57 under 35 U.S.C. §112, second paragraph.

## CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is urged.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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